MSI
MICRO-STAR INTERNATIONAL

Fuzzy 945GM1 / 945GME1 Series

MS-7265(V3.X) Mainboard

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Revision History

Revision	Revision History	Date
V3.0	First release for IPC	August 2007

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

> Visit the MSI website for FAQ, technical guide, BIOS updates, driver updates, and other information: ***http://global.msi.com.tw/index.php?func=faqIndex***
> Contact our technical staff at: ***http://support.msi.com.tw***

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet. Rating: 100-127/200-240V~, 4/2A, 60/50Hz.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by service personnel:

    † The power cord or plug is damaged.
    † Liquid has penetrated into the equipment.
    † The equipment has been exposed to moisture.
    † The equipment does not work well or you can not get it work according to User's Manual.
    † The equipment has dropped and damaged.
    † The equipment has obvious sign of breakage.

12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60⁰C (140⁰F), IT MAY DAMAGE THE EQUIPMENT.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成無線電干擾，在這種情況下，使用者會被要求採取某些適當的對策。

廢電池請回收
For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the measures listed below.

† Reorient or relocate the receiving antenna.

† Increase the separation between the equipment and receiver.

† Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

† Consult the dealer or an experienced radio/television technician for help.

Notice 1
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2
Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

FC **Micro-Star International**
        MS-7265

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

WEEE (Waste Electrical and Electronic Equipment) Statement

ENGLISH

To protect the global environment and as an environmentalist, MSI must remind you that...

Under the European Union ("EU") Directive on Waste Electrical and Electronic Equipment, Directive 2002/96/EC, which takes effect on August 13, 2005, products of "electrical and electronic equipment" cannot be discarded as municipal waste anymore and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life. MSI will comply with the product take back requirements at the end of life of MSI-branded products that are sold into the EU. You can return these products to local collection points.

DEUTSCH

Hinweis von MSI zur Erhaltung und Schutz unserer Umwelt

Gemäß der Richtlinie 2002/96/EG über Elektro- und Elektronik-Altgeräte dürfen Elektro- und Elektronik-Altgeräte nicht mehr als kommunale Abfälle entsorgt werden. MSI hat europaweit verschiedene Sammel- und Recyclingunternehmen beauftragt, die in die Europäische Union in Verkehr gebrachten Produkte, am Ende seines Lebenszyklus zurückzunehmen. Bitte entsorgen Sie dieses Produkt zum gegebenen Zeitpunkt ausschliesslich an einer lokalen Altgerätesammelstelle in Ihrer Nähe.

FRANÇAIS

En tant qu'écologiste et afin de protéger l'environnement, MSI tient à rappeler ceci...

Au sujet de la directive européenne (EU) relative aux déchets des équipement électriques et électroniques, directive 2002/96/EC, prenant effet le 13 août 2005, que les produits électriques et électroniques ne peuvent être déposés dans les décharges ou tout simplement mis à la poubelle. Les fabricants de ces équipements seront obligés de récupérer certains produits en fin de vie. MSI prendra en compte cette exigence relative au retour des produits en fin de vie au sein de la communauté européenne. Par conséquent vous pouvez retourner localement ces matériels dans les points de collecte.

РУССКИЙ

Компания MSI предпринимает активные действия по защите окружающей среды, поэтому напоминаем вам, что...

В соответствии с директивой Европейского Союза (ЕС) по предотвращению загрязнения окружающей среды использованным электрическим и электронным оборудованием (директива WEEE 2002/96/EC), вступающей в силу 13 августа 2005 года, изделия, относящиеся к электрическому и электронному оборудованию, не могут рассматриваться как бытовой мусор, поэтому производители вышеперечисленного электронного оборудования обязаны принимать его для переработки по окончании срока службы. MSI обязуется соблюдать требования по приему продукции, проданной под маркой MSI на территории ЕС, в переработку по окончании срока службы. Вы можете вернуть эти изделия в специализированные пункты приема.

ESPAÑOL

MSI como empresa comprometida con la protección del medio ambiente, recomienda:

Bajo la directiva 2002/96/EC de la Unión Europea en materia de desechos y/o equipos electrónicos, con fecha de rigor desde el 13 de agosto de 2005, los productos clasificados como "eléctricos y equipos electrónicos" no pueden ser depositados en los contenedores habituales de su municipio, los fabricantes de equipos electrónicos, están obligados a hacerse cargo de dichos productos al termino de su periodo de vida. MSI estará comprometido con los términos de recogida de sus productos vendidos en la Unión Europea al final de su periodo de vida. Usted debe depositar estos productos en el punto limpio establecido por el ayuntamiento de su localidad o entregar a una empresa autorizada para la recogida de estos residuos.

NEDERLANDS

Om het milieu te beschermen, wil MSI u eraan herinneren dat....

De richtlijn van de Europese Unie (EU) met betrekking tot Vervuiling van Electrische en Electronische producten (2002/96/EC), die op 13 Augustus 2005 in zal gaan kunnen niet meer beschouwd worden als vervuiling.

Fabrikanten van dit soort producten worden verplicht om producten retour te nemen aan het eind van hun levenscyclus. MSI zal overeenkomstig de richtlijn handelen voor de producten die de merknaam MSI dragen en verkocht zijn in de EU. Deze goederen kunnen geretourneerd worden op lokale inzamelingspunten.

SRPSKI

Da bi zaštitili prirodnu sredinu, i kao preduzeće koje vodi računa o okolini i prirodnoj sredini, MSI mora da vas podesti da...

Po Direktivi Evropske unije ("EU") o odbačenoj elektronskoj i električnoj opremi, Direktiva 2002/96/EC, koja stupa na snagu od 13. Avgusta 2005, proizvodi koji spadaju pod "elektronsku i električnu opremu" ne mogu više biti odbačeni kao običan otpad i proizvođači ove opreme biće prinudeni da uzmu natrag ove proizvode na kraju njihovog uobičajenog veka trajanja. MSI će poštovati zahtev o preuzimanju ovakvih proizvoda kojima je isteko vek trajanja, koji imaju MSI oznaku i koji su prodati u EU. Ove proizvode možete vratiti na lokalnim mestima za prikupljanje.

POLSKI

Aby chronić nasze środowisko naturalne oraz jako firma dbająca o ekologię, MSI przypomina, że...

Zgodnie z Dyrektywą Unii Europejskiej ("UE") dotyczącą odpadów produktów elektrycznych i elektronicznych (Dyrektywa 2002/96/EC), która wchodzi w życie 13 sierpnia 2005. tzw. "produkty oraz wyposażenie elektryczne i elektronizne " nie mogą być traktowane jako śmieci komunalne, tak więc producenci tych produktów będą zobowiązani do odbierania ich w momencie gdy produkt jest wycofywany z użycia. MSI wypełni wymagania UE, przyjmując produkty (sprzedawane na terenie Unii Europejskiej) wycofywane z użycia. Produkty MSI będzie można zwracać w wyznaczonych punktach zbiorczych.

TÜRKÇE

Çevreci özelliğiyle bilinen MSI dünyada çevreyi korumak için hatırlatır:

Avrupa Birliği (AB) Kararnamesi Elektrik ve Elektronik Malzeme Atığı, 2002/96/EC Kararnamesi altında 13 Ağustos 2005 tarihinden itibaren geçerli olmak üzere, elektrikli ve elektronik malzemeler diğer atıklar gibi çöpe atılamayacak ve bu elektronik cihazların üreticileri, cihazların kullanım süreleri bittikten sonra ürünleri geri toplamakla yükümlü olacaktır. Avrupa Birliği'ne satılan MSI markalı ürünlerin kullanım süreleri bittiğinde MSI ürünlerin geri alınması isteği ile işbirliği içerisinde olacaktır. Ürünlerinizi yerel toplama noktalarına bırakabilirsiniz.

ČESKY

Záleží nám na ochraně životního prostředí - společnost MSI upozorňuje...

Podle směrnice Evropské unie ("EU") o likvidaci elektrických a elektronických výrobků 2002/96/EC platné od 13. srpna 2005 je zakázáno likvidovat "elektrické a elektronické výrobky" v běžném komunálním odpadu a výrobci elektronických výrobků, na které se tato směrnice vztahuje, budou povinni odebírat takové výrobky zpět po skončení jejich životnosti.   Společnost MSI splní požadavky na odebírání výrobků značky MSI, prodávaných v zemích EU, po skončení jejich životnosti. Tyto výrobky můžete odevzdat v místních sběrnách.

MAGYAR

Annak érdekében, hogy környezetünket megvédjük, illetve környezetvédőként fellépve az MSI emlékezteti Önt, hogy ...

Az Európai Unió ("EU") 2005. augusztus 13-án hatályba lépő, az elektromos és elektronikus berendezések hulladékairól szóló 2002/96/EK irányelve szerint az elektromos és elektronikus berendezések többé nem kezelhetők lakossági hulladékként, és az ilyen elektronikus berendezések gyártói kötelessé válnak az ilyen termékek visszavételére azok hasznos élettartama végén.   Az MSI betartja a termékvisszavétellel kapcsolatos követelményeket az MSI márkanév alatt az EU-n belül értékesített termékek esetében, azok élettartamának végén. Az ilyen termékeket a legközelebbi gyűjtőhelyre viheti.

ITALIANO

Per proteggere l'ambiente, MSI, da sempre amica della natura, ti ricorda che....

In base alla Direttiva dell'Unione Europea (EU) sullo Smaltimento dei Materiali Elettrici ed Elettronici, Direttiva 2002/96/EC in vigore dal 13 Agosto 2005, prodotti appartenenti alla categoria dei Materiali Elettrici ed Elettronici non possono più essere eliminati come rifiuti municipali: i produttori di detti materiali saranno obbligati a ritirare ogni prodotto alla fine del suo ciclo di vita. MSI si adeguerà a tale Direttiva ritirando tutti i prodotti marchiati MSI che sono stati venduti all'interno dell'Unione Europea alla fine del loro ciclo di vita. È possibile portare i prodotti nel più vicino punto di raccolta.

CONTENTS

Chapter 1

Getting Started

Thank you for choosing the Fuzzy 945GM1 / 945GME1 Series (MS-7265 V3.X) Mini-ITX mainboard. The Fuzzy 945GM1 / 945GME1 Series mainboards are based on **Intel® 945GM / 945GME and Intel® ICH7-MDH** chipsets for optimal system efficiency. The Fuzzy 945GM1 / 945GME1 Series deliver a high performance and professional desktop platform solution.

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Mainboard Specifications

Processor Support
- Supports Intel® Yonah (Intel® Core™ Duo/ T2000 Seqence) and Merom Napa Reflash (Intel® Core™ 2 Duo/ T5000 & T7000 Sequence) processor up to 2.33GHz (Napa Platform) in PGA Package
- 2MB L2 cache (Yonah)/ 4MB (Merom)
- Supports 3 pin CPU Fan Pin-Header with Fan Speed Control
- Supports EIST Technology
- Supports Intel® Core™ Microarchitecture

Supported FSB
- 533/ 667 MHz

Chipset
- North Bridge: Intel® 945GM/ 945GME chipset
- South Bridge: Intel® ICH7-MDH (82801GHM) chipset

Memory Support
- DDR2 533/ 667 SDRAM (4GB Max)
- 2 DDR2 DIMMs (240pin / 1.8V)

LAN
- Supports Dual Intel® 10/100/1000 LAN by two Intel® 82541PI Giga-LAN controller

Audio
- Chip integrated by Realtek® ALC655
- Flexible 5.1-channel audio
- Compliant with AC97 Spec

IDE
- 1 IDE port by Intel® ICH7-MDH
- Supports Ultra DMA 66/ 100 mode
- Supports PIO, Bus Master operation mode

SATA
- 2 SATA ports by Intel® ICH7-MDH
- Supports two SATA devices
- Supports storage and data transfers at up to 150 MB/s

RAID
- SATA1~2 support RAID 0/ 1/ JBOD mode by Intel® ICH7-MDH

Floppy
- 1 floppy port
- Supports 1 FDD with 360KB, 720KB, 1.2MB, 1.44MB and 2.88MB

Connectors
● **Back Panel**
- 1 PS/2 mouse port
- 1 PS/2 keyboard port
- 2 serial ports
- 4 USB 2.0 ports
- 2 LAN jacks
- 3 flexible audio jacks
- 1 VGA port
- 1 DVI port

● **On-Board Pinheaders/ Connectors**
- 1 Aux Line-In connector
- 2 USB 2.0 pinheaders
- 1 Front Panel Audio pinheader

Slots
- 1 PCI v2.3 slot (for standard PCI add-on card)

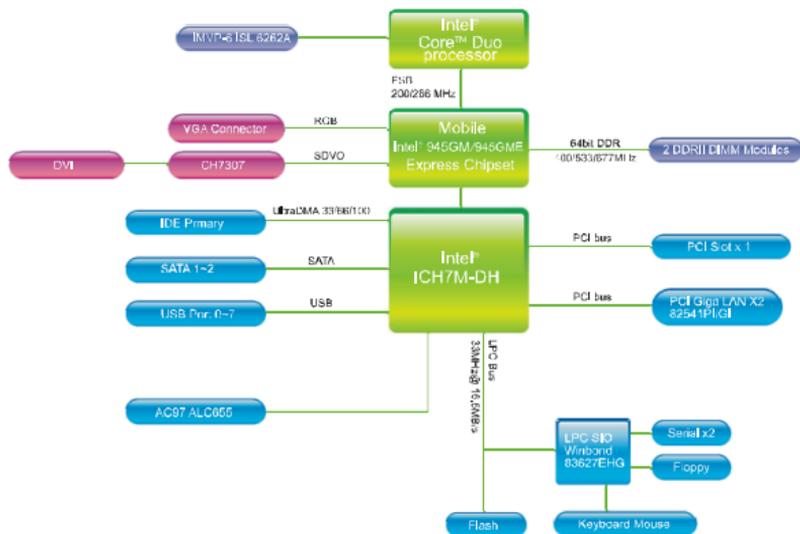**Form Factor**
- Mini-ITX (17cm x 17cm)

Mounting
- 4 mounting holes

Block Diagram

Mechanical Drawing
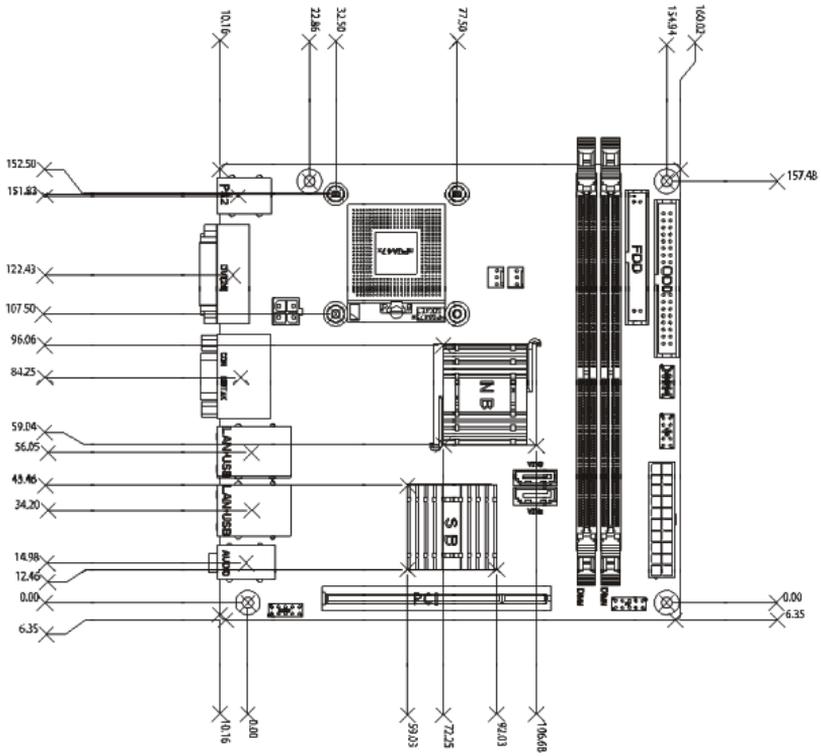
Back Panel and I/O Shield Drawing
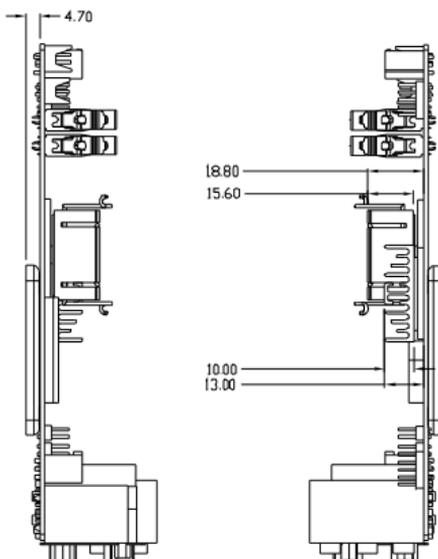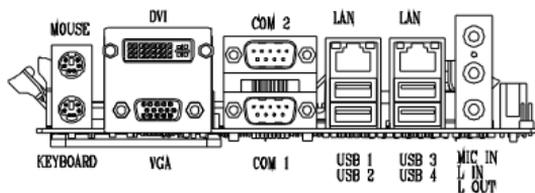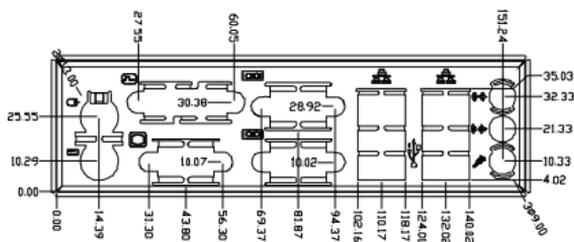
Mainboard Layout

**Fuzzy 945GM1 / 945GME1 Series
(MS-7265 V3.X) Mini-ITX Mainboard**

1-7
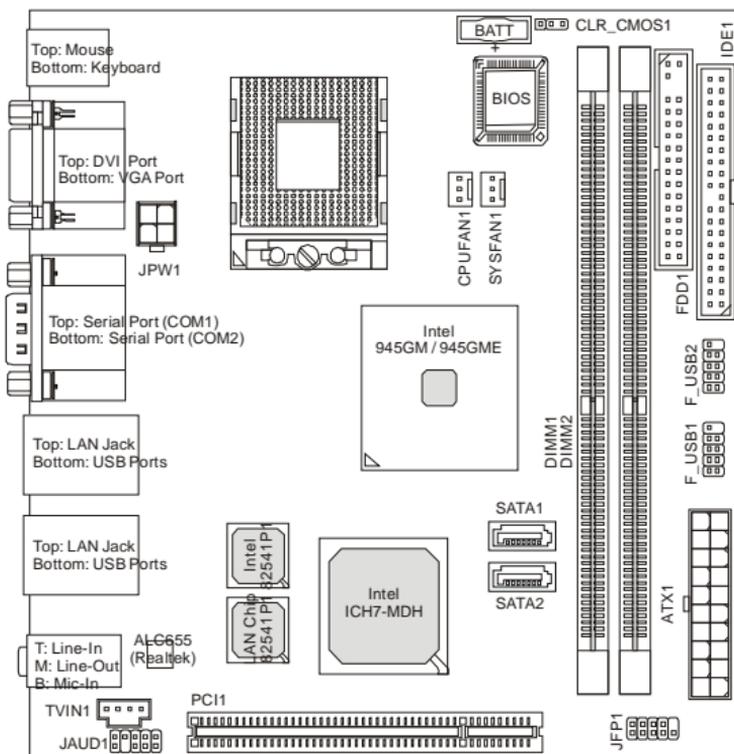
Packing Checklist

MSI mainboard	**MSI Driver/Utility CD**	**SATA Cable**
Power Cable	**Standard Cable for IDE Devices (Optional)**	**User's Guide**

* The pictures are for yuour reference only. Your packing contents may vary depending on the model you purchased.

Chapter 2
Hardware Setup

This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install in the wrong orientation, the components will not work properly.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

ONLY FOR SERVICE PERSONEL

⚠ **Always unplug the power cord before inserting any add-on card or module.**

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Quick Components Guide

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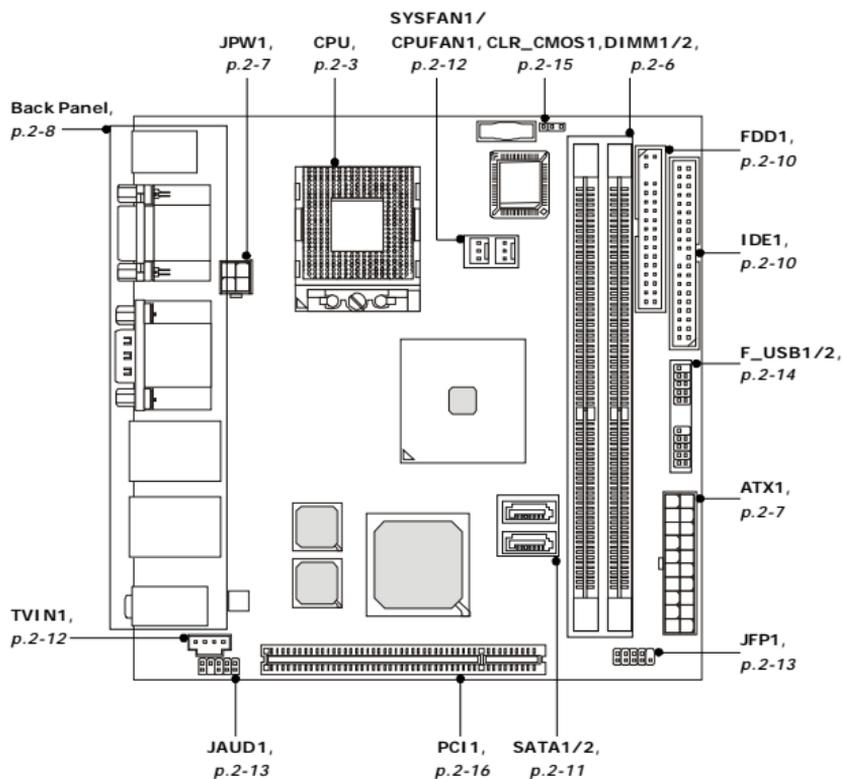
CPU (Central Processing Unit)

The mainboard supports Intel® Yonah (Intel® Core™ Duo/ T2000 Seqence) and Merom Napa Reflash (Intel® Core™ 2 Duo/ T5000 & T7000 Sequence) in PGA Package. When you are installing the CPU, make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating. If you do not have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

Important

1. Overheating will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU from overheating.

2. Make sure that you apply an even layer of heat sink paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.

3. While replacing the CPU, always turn off the power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.

CPU & Cooler Installation for PGA Package

1. Locate the CPU socket on the mainboard.

2. Place the CPU on top of the socket. Make sure to align the gold arrow on the CPU with the arrow key on the socket.
3. Push the CPU down until its pins securely fit into the socket.

4. On the front end of the CPU socket is a locking mechanism designed into the form of a screw head. Make sure that you actuate or deactuate this mechanism with a screwdriver before and after installing the CPU.
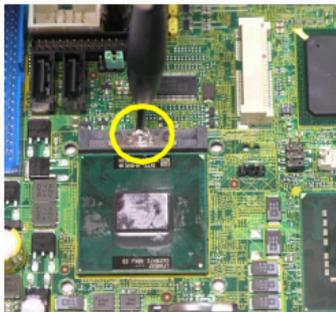
5. Flip over the mainboard and locate the position of the CPU socket.
6. Detach the shield of the CPU cooler backplate paste and install the backplate to the back of the CPU socket with holes aligned.

7. The heatsink paste helps to enhance heat dissipation of the CPU. Before installing the cooler set (fan & heatsink bundled), make sure that you detach the shield of the heatsink paste under the cooler set.
8. Locate the four screw holes around the CPU socket where the CPU cooler backplate was installed. Align the cooler set with the screw holes and mount it on top of the CPU.
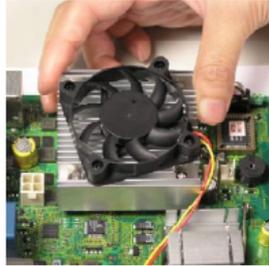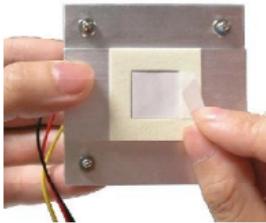
9. Screw to secure the cooler set to the mainboard.
10. Connect the fan power cable to the CPUFAN1 connector on the mainboard.

Memory

These DIMM slots are used for installing memory modules.

DDR2
240-pin, 1.8V

64x2=128 pin   **56x2=112 pin**
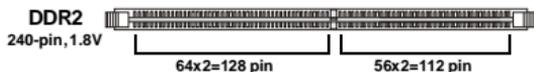
Installing Memory Modules

1. The memory module has only one notch on the center and will only fit in the right orientation.
2. Insert the memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the DIMM slot.

Important

You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.

3. The plastic clip at each side of the DIMM slot will automatically close.

Volt   **Notch**
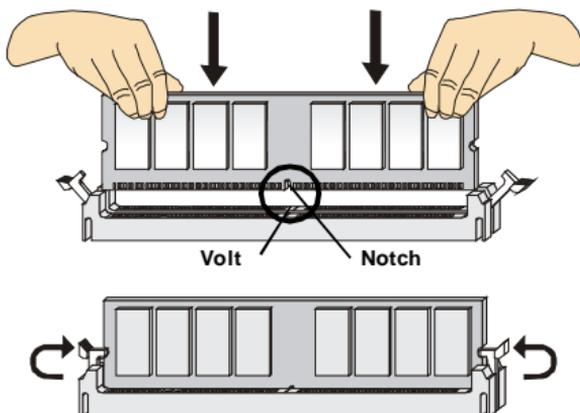
Power Supply

ATX 20-Pin Power Connector: ATX1

This connector allows you to connect to an power supply. To connect to the power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.
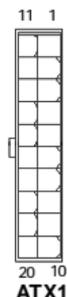
Pin Definition

PIN	SIGNAL	PIN	PINSIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

ATX1

ATX 12V Power Connector: JPW1

This 12V power connector is used to provide power to the CPU.

Pin Definition

PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

JPW1

Important

1. Make sure that all the connectors are connected to proper ATX power supplies to ensure stable operation of the mainboard.
2. Power supply of 130 watts (and above) is highly recommended for system stability.
3. ATX 12V power connection should be greater than 6A.

Back Panel
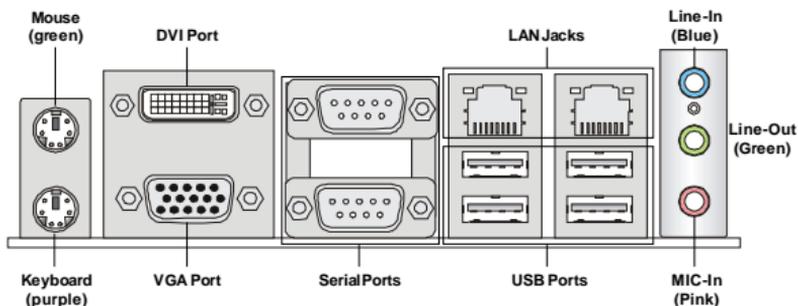
▶ **Mouse/Keyboard**
The standard PS/2® mouse/keyboard DIN connector is for a PS/2® mouse/ keyboard.

▶ **DVI Port**
The DVI (Digital Visual Interface) connector allows you to connect an LCD monitor. It provides a high-speed digital interconnection between the computer and its display device. To connect a LCD monitor, simply plug your monitor cable into the DVI connector, and make sure that the other end of the cable is properly connected to your monitor (refer to your monitor manual for more information).

▶ **VGA Port**
The DB15-pin female connector is provided for monitor.

▶ **Serial Port**
The serial port is a 16550A high speed communications port that sends/ receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.

▶ **USB Port**
The USB (Universal Serial Bus) port is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices.

▶ **LAN**

The standard RJ-45 LAN jack is for connection to the Local Area Network (LAN). You can connect a network cable to it.

Activity Indicator ──── **Link Indicator**
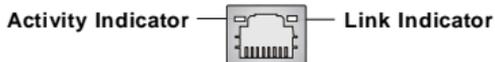
LED	Color	LED State	Condition
Left	Orange	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (brighter & pulsing)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
	Orange	On	1000 Mbit/sec data rate is selected.

▶ **Audio Port Connectors**

These audio connectors are used for audio devices. You can differentiate the color of the audio jacks for different audio sound effects.

■ **Line-In (Blue)** - Line In / Side-Surround Out in 5.1 channel mode, is used for external CD player, tapeplayer or other audio devices.
■ **Line-Out (Green)** - Line Out, is a connector for speakers or headphones.
■ **Mic (Pink)** - Mic, is a connector for microphones.

Connectors

Floppy Disk Drive Connector: FDD1

This connector supports 360KB, 720KB, 1.2MB, 1.44MB or 2.88MB floppy disk drive.

FDD1
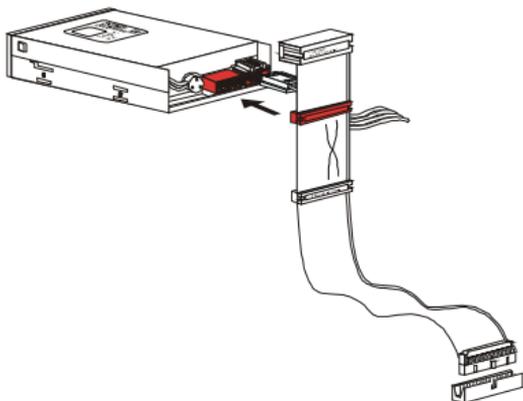
IDE Connector: IDE1

This connector supports IDE hard disk drives, optical disk drives and other IDE devices.

IDE1
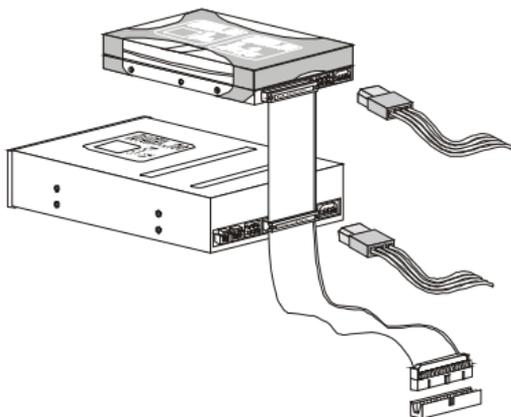
Important

If you install two IDE devices on the same cable, you must config-ure the drives separately to master / slave mode by setting jumpers. Refer to IDE device's documentation supplied by the vendors for jumper setting instructions.

Serial ATAII Connector: SATA1, SATA2

This connector is a high-speed Serial ATA interface port. Each connector can connect to one Serial ATA device.

SATA1

SATA2
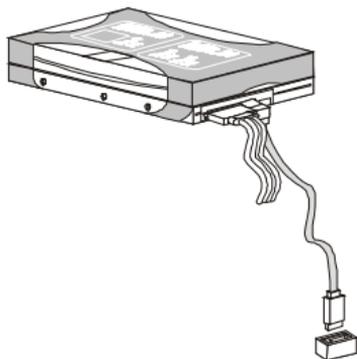
Important

Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during transmission.

Fan Power Connectors: SYSFAN1, CPUFAN1

The fan power connectors support system cooling fan with +12V. When connecting the wire to the connectors, always note that the red wire is the positive and should be connected to the +12V; the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.

```
+12V    □              +12V   □
SENSOR  □            SENSOR   □
GND     □              GND    □

SYSFAN1              CPUFAN1
```

Important

Please refer to the recommended CPU fans at processor's official website or consult the vendors for proper CPU cooling fan.

Aux Line-In Connector: TVIN1

This connector is provided for external audio input.

```
        GND
L ──□ □ □ □── R

      TVIN1
```

Front Panel Connector: JFP1

The mainboard provides one front panel connector for you to connect to the front panel switches and LEDs. JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.
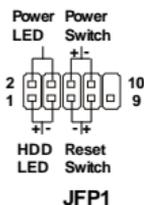
Pin Definition

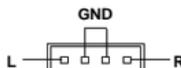| PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up
2	FPPWR/SLP	MSG LED pull-up
3	HD_LED_N	Hard disk active LED
4	FPPWR/SLP	MSG LED pull-up
5	RST_SW_N	Reset Switch low reference pull-down to GND
6	PWR_SW_P	Power Switch high reference pull-up
7	RST_SW_P	Reset Switch high reference pull-up
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

Power LED, Power Switch, HDD LED, Reset Switch — JFP1

Front Panel Audio Connector: JAUD1

This connector allows you to connect the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.
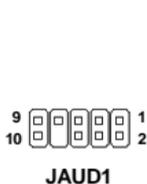
Pin Definition

PIN	SIGNAL	DESCRIPTION
1	N/C	N/C
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return from front panel
7	N/C	N/C
8	KEY	No pin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel

JAUD1

Important

If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumpered in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.

Front USB Connector: F_USB1, F_USB2

This connector, compliant with Intel® I/O Connectivity Design Guide, is ideal for connecting high-speed USB interface peripherals such as USB HDD, digital cameras, MP3 players, printers, modems and the like.

10 9

2 1

F_USB1/2
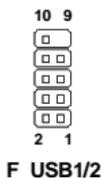
Pin Definition			
PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key (no pin)	10	USBOC

USB 2.0 Bracket
(Optional)
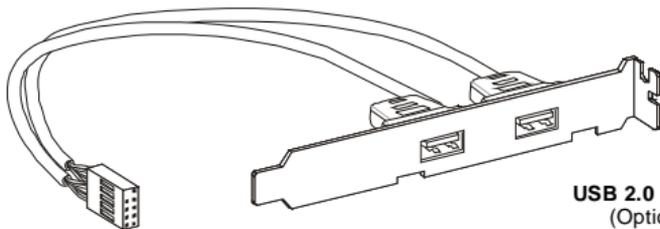
Important

Note that the pins of VCC and GND must be connected correctly to avoid possible damage.

Jumper

Clear CMOS Jumper: CLR_CMOS1

There is a CMOS RAM onboard that has a power supply from an external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, set the jumper to clear data.

CLR_CMOS1 Keep Data Clear Data
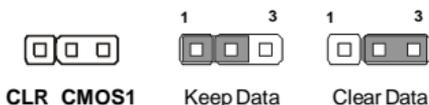
Important

You can clear CMOSa by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

Slot

PCI (Peripheral Component Interconnect) Slot

The PCI slot supports LAN card, SCSI card, USB card, and other add-on cards that comply with PCI specifications.

32-bit PCI Slot

PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus pins as follows:

	Order 1	Order 2	Order 3	Order 4
32-bit PCI1	INT A#	INT B#	INT C#	INT D#

Important

When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

Chapter 3
BIOS Setup

This chapter provides the information on the BIOS Setup program and allows you to configure the system for optimum use.

You may need to run the Setup program when:
▶ An error message appears on the screen during the system booting up, and requests you to run SETUP.
▶ You want to change the default settings for customized features.

MSI
MICRO-STAR INTERNATIONAL

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> key to enter Setup.

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Important

1. The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

2. Upon boot-up, the 1st line appearing after the memory count is the BIOS version. It is usually in the format:

W7265IIP V3.0 070629 where:

▶ *1st digit refers to BIOS maker as A= AMI, W= AWARD, and P= PHOENIX.*
▶ *2nd - 5th digit refers to the model number.*
▶ *6th digit refers to the chipset as I= Intel, N= nVidia, and V= VIA.*
▶ *7th - 8th digit refers to the product type as IP= IPC.*
▶ *V3.0 refers to the BIOS version.*
▶ *070629 refers to the date this BIOS was released.*

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F1>	General Help
<F5>	Previous Values
<F6>	Fail-Safe Defaults
<F7>	Optimized Defaults
<F10>	Save & Exit Setup

Getting Help

After entering the Setup menu, the first menu you will see is the Main Menu.

▶ **Main Menu**

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

▶ **Sub-Menu**

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-

▶ IDE Channel 0 Master	[None]
▶ IDE Channel 0 Slave	
▶ IDE Channel 1 Master	[None]
▶ IDE Channel 1 Slave	[None]

menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.

General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

The Main Menu
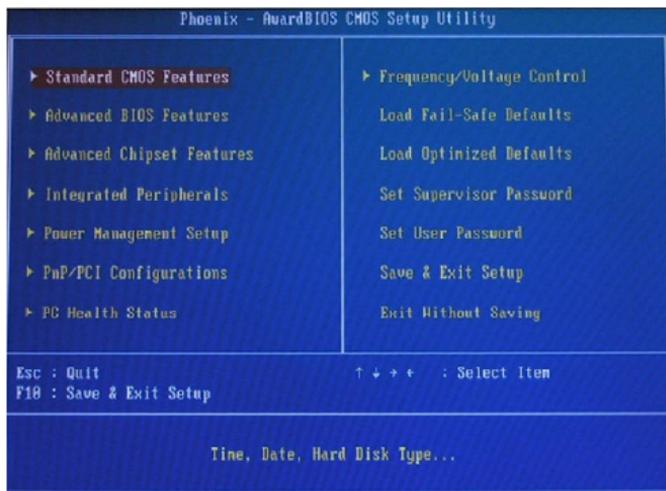
▶ **Standard CMOS Features**
Use this menu for basic system configurations, such as time, date etc.

▶ **Advanced BIOS Features**
Use this menu to setup the items of the special enhanced features.

▶ **Advanced Chipset Features**
Use this menu to change the values in the chipset registers and optimize your system's performance.

▶ **Integrated Peripherals**
Use this menu to specify your settings for integrated peripherals.

▶ **Power Management Setup**
Use this menu to specify your settings for power management.

▶ **PnP/PCI Configurations**
This entry appears if your system supports PnP/PCI.

▶ **PC Health Status**
This entry shows your PC health status.

▶ **Frequency/ Voltage Control**
Use this menu to specify your settings for frequency/ voltage control.

▶ **Load Fail-Safe Defaults**
Use this menu to load the default values set by the BIOS vendor for stable system performance.

▶ **Load Optimized Defaults**
Use this menu to load the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

▶ **Set Supervisor Password**
Use this menu to set Supervisor Password.

▶ **Set User Password**
Use this menu to set User Password.

▶ **Save & Exit Setup**
Save changes to CMOS and exit setup.

▶ **Exit Without Saving**
Abandon all changes and exit setup.

Standard CMOS Features


```
              Phoenix - AwardBIOS CMOS Setup Utility
                      Standard CMOS Features

   Date (mm:dd:yy)          Tue  Jul  4  2006           Item Help
   Time (hh:mm:ss)          13 : 45 : 34
                                                     Menu Level   ▶
 ▶ IDE Channel 0 Master     [ None]
 ▶ IDE Channel 0 Slave      [WDC WD400EB-11CPF0]      Change the day, month,
 ▶ IDE Channel 2 Master     [ None]                   year and century
 ▶ IDE Channel 2 Slave      [ None]




   Drive A                  [None]
   Halt On                  [All Errors]
 ▶ System Information        [Press Enter]

   Base Memory                   640K
   Extended Memory             514048K
   Total Memory                515072K

↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
   F5: Previous Values      F6: Fail-Safe Defaults    F7: Optimized Defaults
```

▶ Date (mm:dd:yy)
This allows you to set the system to the date that you want (usually the
current date). The format is <day> <month> <date> <year>.

Day	Day of the week, from Sun to Sat, determined by BIOS. Read only.
Month	The month from Jan. through Dec.
Date	The date from 1 to 31 can be keyed by numeric function keys.
Year	The year can be adjusted by users.

▶ Time (hh:mm:ss)
This allows you to set the system time that you want (usually the current time).
The time format is <hour> <minute> <second>.

▶ **IDE Channel 0/1/2/3 Master/Slave**

Press <+> or <-> to select the hard disk drive type. The specification of hard disk drive will show up on the right hand according to your selection. Press <Enter> for the sub-menu of each item:

▶ **IDE HDD Auto-Detection**

Press Enter to allow BIOS to auto-detect the type of the HDDs.
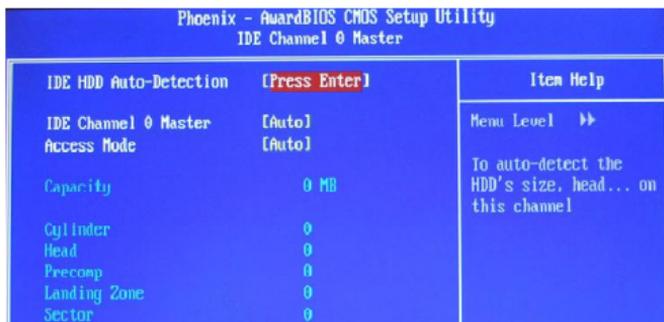
▶ **IDE Channel 0 Master**

Press PgUp/<+> or PgDn/<-> to select Manual, None or Auto type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Manual to define your own drive type manually.

If you select *Manual*, related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

Access Mode	The settings are CHS, LBA, Large, Auto.
Capacity	The formatted size of the storage device.
Cylinder	Number of cylinders.
Head	Number of heads.
Precomp	Write precompensation.
Landing Zone	Cylinder location of the landing zone.
Sector	Number of sectors.

▶ **System Information**

Press <Enter> to for the sub-menu of each item:

▶ **BIOS Version**

This item shows the BIOS version of your system (read only).

▶ **CPU Type/ CPU ID/ uCode ID/ CPU Frequency/ CPU L2 Cache**

The three items show the CPU related information of your system (read only).

Advanced BIOS Features
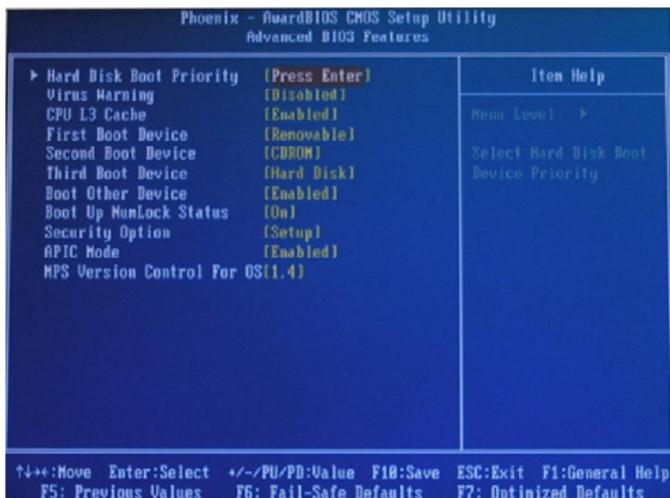
▶ **Hard Disk Boot Priority**
Press [Enter] to enter a sub menu which shows every current hard drive installed. Use [PageUp] or [PageDown] key to select the first boot hard disk.

▶ **Virus Warning**
The item is to set the Virus Warning feature for IDE Hard Disk boot sector protection. If the function is enabled and any attempt to write data into this area is made, BIOS will display a warning message on screen and beep.

▶ **CPU L3 Cache**
Level 3 cache is the extra cache built into motherboards between the microprocessor and the main memory. Located away from the CPU, the L3 cache is slower than the L1 & L2 caches. This setting allows you to turn on or off the L3 cache.

3-9

▶ **First Boot Device/ Second Boot Device/ Third Boot Device**
The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system.

▶ **Boot Other Device**
Setting the option to [Enabled] allows the system to try to boot from other device if the system fails to boot from the 1st/2nd/3rd boot device.

Important

Available settings for "1st/2nd/3rd Boot Device" vary depending on the bootable devices you have installed. For example, if you did not install a floppy drive, the setting "Floppy" will not show up.

▶ **Boot Up NumLock Status**
This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.
Security Option
This specifies the type of BIOS password protection that is implemented. Settings are described below:

▶ **Security Option**
This specifies the type of BIOS password protection that is implemented. Settings are described below:
Setup	The password prompt appears only when end users try to run Setup.
System	A password prompt appears every time when the computer is powered on or when end users try to run Setup.

▶ **APIC Mode**
This field is used to enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance with PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQ resources for the system.

▶ **MPS Version Control For OS**
This field allows you to select which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version supported by your operating system. To find out which version to use, consult the vendor of your operating system.

Advanced Chipset Features

```
Phoenix - AwardBIOS CMOS Setup Utility
          Advanced Chipset Features
```

```
== VGA Setting ==                              Item Help
On-Chip Frame Buffer Size [ 8MB]
DVMT Mode                 [DVMT]          Menu Level    ▶
DVMT/FIXED Memory Size    [ 128MB]
                                         Onboard VGA share
                                         memory size




↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
   F5: Previous Values   F6: Fail-Safe Defaults     F7: Optimized Defaults
```
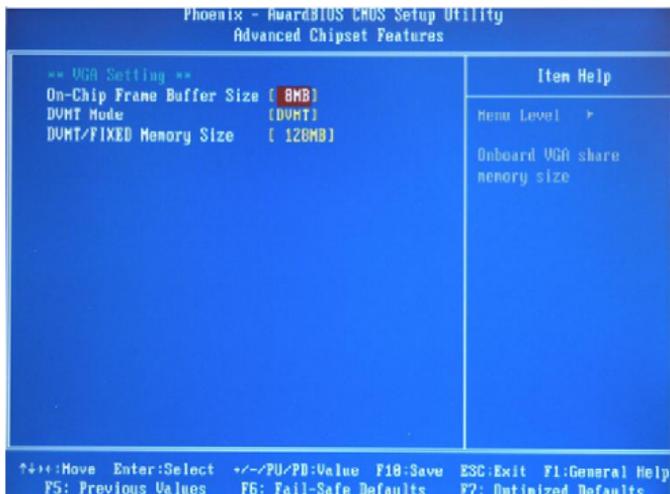
▶ **On-Chip Frame Buffer Size**
Frame Buffer is the video memory that stores data for video display (frame).
This field is used to determine the memory size for Frame Buffer. Larger frame
buffer size increases video performance.

▶ **DVMT Mode**
Use the field to select the mode of the digital monitor you use. Setting options:
[Fixed Mode] [DVMT Mode] [Both].

▶ **DVMT/ FIXED Memory Size**
Specify the size of DVMT memory to allocate for video memory.

Important

Do not change these settings unless you are familiar with the chipset.

Integrated Peripherals
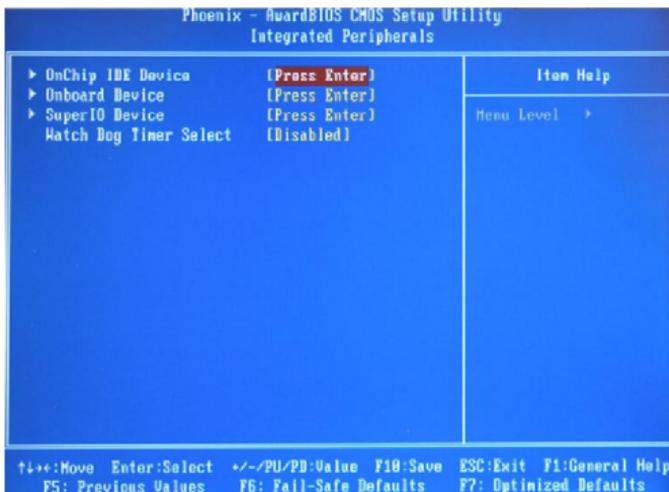
▶ **OnChip IDE Device**

Press <Enter> and the following sub-menu appears:

▶ **SATA Mode**

This item allows you to configure SATA mode

[IDE]   As serial ATA only.

[RAID] As SATA RAID mode Supporting RAID0,1,5,10.

[AHCI] If AHCI is chosen, it allows you to enable SATA Stagger
Spinup Support (not RAID mode) and take all hard disks
on board as master.

▶ **On-Chip Serial ATA**

This setting is used to specify the SATA controller. The settings are:

[Disabled]	Disable the SATA controller.
[Auto]	PATA and SATA will be arranged by BIOS, and you will be able to see the IDE Device status listed in **Standard COMS Features**.
[Legacy Mode]	PATA and SATA will be combined. Max. of 2 IDE drives in each channel are available.
[Native Mode]	PATA and SATA will both be enabled. Max. of 6 IDE drives are supported.

▶ **SATA PORT Speed Settings**
This setting controls the speed of the SATA port.

▶ **Onboard Device**
Press <Enter> and the following sub-menu appears:

▶ **USB Controller**
This setting is used to enable/disable the onboard USB controller.

▶ **USB 2.0 Controller**
This setting is used to enable/disable the onboard USB 2.0 controller.

▶ **USB Keyboard Support**
Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

▶ **AC97 Audio**
[Auto] allows the mainboard to detect whether an audio device is used. If an audio device is detected, the onboard AC97 (Audio Codec'97) controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect an audio device.

▶ **Onboard LAN Device 1/2**
This setting controls the onboard LAN 1/2 device.

▶ **Onboard Lan 1/2 Boot ROM**
These items enable or disable the initialization of the onboard LAN Boot ROMs during bootup. Selecting [Disabled] will speed up the boot process.

▶ **SuperIO Device**
Press <Enter> and the following sub-menu appears:
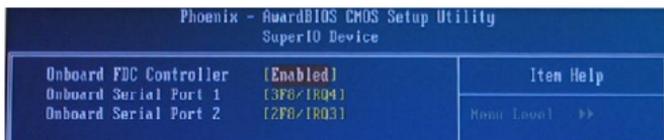
▶ **Onboard FDC Controller**
Select [Enabled] if your system has a floppy disk controller (FDD) in-stalled on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select [Disabled] in this field.

▶ **Onboard Serial Port 1/2**
These items specify the base I/O port addresses of the onboard Serial Port 1/ Serial Port 2. Selecting [Auto] allows AMIBIOS to automatically determine the correct base I/O port address. Settings: [3F8/IRQ4], [2F8/IRQ4], [3E8/IRQ4], [2E8/IRQ3] and [Disabled].

▶ **Watch Dog Timer**
You can enable the system watch-dog timer, a hardware timer that generates either an NMI or a reset when the software that it monitors does not respond as expected each time the watch dog polls it (select the time period in a separate field). See the WDT fields, below.

Power Management Setup
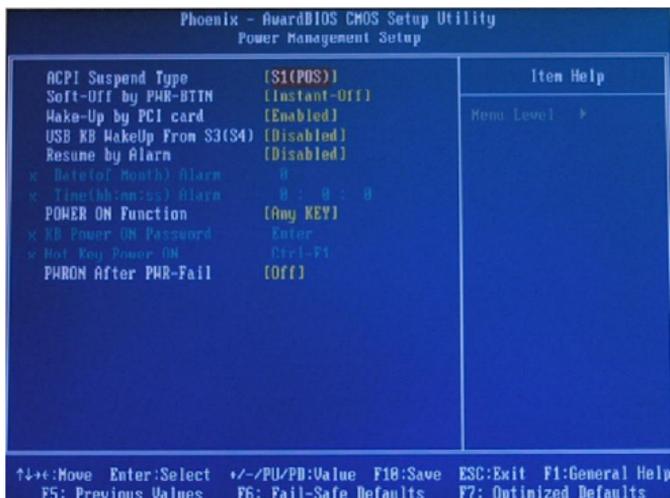
▶ **ACPI Suspend Type**
This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME, Windows 2000 and Windows XP, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

[S1/POS] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.

[S3/STR] The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a "wake up" event occurs.

▶ **Soft-Off by PWR-BTTN**
When [Enabled], turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity.

▶ **Wake-Up By PCI card**
When setting to [Enabled], this setting allows your system to be awakened from the power saving modes through any event on PCI PME (Power Management Event).

▶ **USB KB WakeUp From S3 (S4)**
When setting to [Enabled], this setting allows your system to be awakened from S3 state.

▶ **Resume by Alarm**
When [Enabled], your can set the date and time at which the RTC (real-time clock) alarm awakens the system from suspend mode.

▶ **POWER ON Function**
This controls how the PS/2 mouse or keyboard can power on the system.

▶ **PWRON After PWR-fail**
This item specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

[Off]	Leaves the computer in the power off state.
[On]	Leaves the computer in the power on state.
[Former-sts]	Restores the system to the status before power fail ure or interrupt occurred.

PNP/ PCI Configurations

```
        Phoenix - AwardBIOS CMOS Setup Utility
                 PnP/PCI Configurations

Init Display First      [PCI Slot]              Item Help

                                              Menu Level   ▶












↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
  F5: Previous Values     F6: Fail-Safe Defaults    F7: Optimized Defaults
```
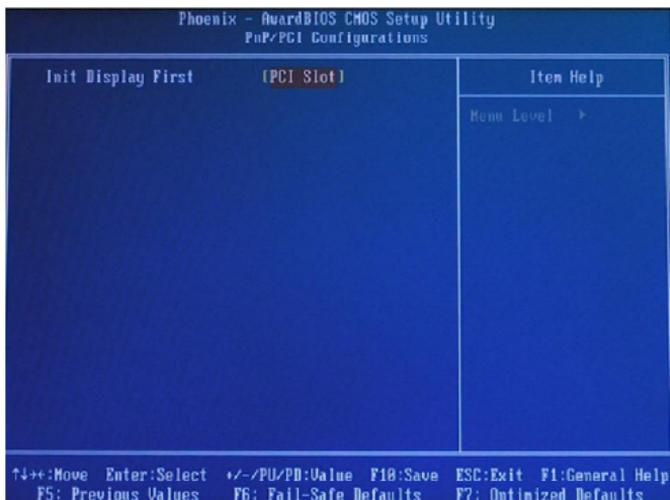
▶ **Init Display First**
This setting specifies which VGA card is your primary graphics adapter. Setting options are:
   [PCI Slot]   The system initializes the PCI graphic card first.
   [Onboard] The system initializes the VGA graphic card first.

3-17

PC Health Status

▶ **Current System/CPU Temperature, System/CPU Fan Speed, Vcore, 12(V), 1.5(V), 5(V), DDR2(V), 3VCC(V), VBAT(V), 3VSB(V)**
These items display the current status of all of the monitored hardware devices/ components such as CPU voltages, temperatures and all fans' speeds.

▶ **Shutdown Temperature**
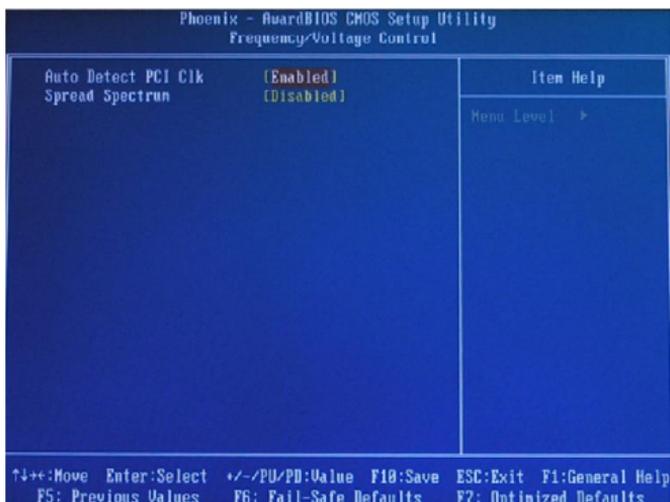If the CPU temperature reaches the limit preset in this setting, the system will shut down automatically.

Frequency/ Voltage Control

```
              Phoenix - AwardBIOS CMOS Setup Utility
                      Frequency/Voltage Control

 Auto Detect PCI Clk        [Enabled]                  Item Help
 Spread Spectrum            [Disabled]
                                                   Menu Level   ▶


















 ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values     F6: Fail-Safe Defaults    F7: Optimized Defaults
```

▶ **Auto Detect PCI Clk**

This item is used to auto detect the PCI slots. When set to [Enabled], the system will remove (turn off) clocks from empty PCI slots to minimize the electromagnetic interference (EMI).

▶ **Spread Spectrum**

When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The Spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves.

Important

1. If you do not have any EMI problem, leave the setting at [Disabled] for optimal system stability and performance. But if you are plagued by EMI, select the value of Spread Spectrum for EMI reduction.

2. The greater the Spread Spectrum value is, the greater the EMI is reduced, and the system will become less stable. For the most suitable Spread Spectrum value, please consult your local EMI regulation.

3. Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clock speed which may just cause your overclocked processor to lock up.

Load Fail-Safe/ Optimized Defaults

The two options on the main menu allow users to restore all of the BIOS settings to the default Fail-Safe or Optimized values. The Optimized Defaults are the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard. The Fail-Safe Defaults are the default values set by the BIOS vendor for stable system performance.

When you select Load Fail-Safe Defaults, a message as below appears:

Load Fail-Safe Defaults (Y/N)? N

Pressing *Y* loads the BIOS default values for the most stable, minimal system performance.

Load Optimized Defaults (Y/N)? N

Set Supervisor/ User Password

When you select Load Optimized Defaults, a message as below appears:

```
Enter Password:
```

Type the password, up to six characters in length, and press <Enter>. The password typed now will replace any previously set password from CMOS memory. You will be prompted to confirm the password. Retype the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Chapter 4
System Resources

This chapter provides information on the following system resources:

1. Watch Dog Timer Setting (p.4-2);

2. Award POST Code (p.4-5);

3. PCI Configuration (p.4-11);

4. Resource List (p.4-12).

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Watchdog Timer Setting

This watchdog timer is using Super I/O Winbond W83627EHG pin 77 WDTO# pin to system reset.

Setup Procedure
1. Enter super I/O configuration mode

```
mov     dx, 02eh
mov     al, 087h
out     dx, al
out     dx, al
```

2. Set pin 77 to WDTO# function

BIT	READ / WRITE	DESCRIPTION
1	R / W	Pin 75 Select (reset by RSMRST#) = 0 RSMRST# = 1 GPIO51
0	R / W	Pin 77 Select (reset by RSMRST#) = 0 WDTO# = 1 GPIO50

```
mov     dx,02eh
mov     al,02Dh        ;;;Register 2Dh
out     dx,al
inc     dx
in      al,dx
and     al,0FEh        ;Config Bit 0 As 0
out     dx,al          ;Config PIN 77 as WDTO#
```

3. Select Logical Device 8

```
mov     dx, 02eh
mov     al, 07h
out     dx, al         ;point to Logical Device Number Register
inc     dx
mov     al, 08h        ;select Logical Device 8
out     dx, al
```

4. Enable watchdog timer
   ; Activate WDTO#

CR 30h. (Default 00h)

Bit	Read / Write	Description	
7~1	Reserved.		
0	R / W	0: WDTO# is inactive.	1: Activate WDTO#.

```
mov        dx, 02eh       ;CR 30h: bit 0 fill in 1
mov        al, 030h
out        dx, al
inc        dx
mov        al, 01h
out        dx, al
```

; Setup WDTO# count mode
; Set bit4 and bit 3 by request
; Set bit 2, bit 1 to 0

CR F5h. (WDTO#, PLED and KBC P20 control mode register; Default 00h)

BIT	READ / WRITE	DESCRIPTION
7~6	R / W	Select Power LED mode. 00: Power LED pin is tri-stated. 01: Power LED pin is driven low. 10: Power LED pin outputs 1Hz pulse with 50% duty cycle. 11: Power LED pin outputs $^1/_4$Hz pulse with 50% duty cycle.
5	Reserved.	
4	R / W	Faster 1000 times for WDTO# count mode. 0: Disable. 1: Enable. (If bit-3 is Second Mode , the count mode be 1/1000 Sec.) (If bit-3 is Minute Mode , the count mode be 1/1000 Min.)
3	R / W	Select WDTO# count mode. 0: Second Mode. 1: Minute Mode.
2	R / W	Enable the rising edge of KBC reset (P20) to issue time-out event. 0: Disable. 1: Enable.
1	R / W	Disable / Enable the WDTO# output low pulse to the KDRST# pin (PIN60) 0: Disable. 1: Enable.
0	Reserved.	

CR F7h. (WDTO# control & status register; Default 00h)

BIT	READ / WRITE	DESCRIPTION
7	R / W	Mouse interrupt reset watch-dog timer enable 0: Watchdog timer is not affected by mouse interrupt. 1: Watchdog timer is reset by mouse interrupt.
6	R / W	Keyboard interrupt reset watch-dog timer enable 0: Watchdog timer is not affected by keyboard interrupt. 1: Watchdog timer is reset by keyboard interrupt.
5	Write "1" Only	Trigger WDTO# event. This bit is self-clearing.
4	R / W Write "0" Clear	WDTO# status bit 0: Watchdog timer is running. 1: Watchdog timer issues time-out event.
3~0	R / W	These bits select IRQ resource for WDTO#. (02h for SMI# event.)

```
mov         dx, 02eh         ;CR F7h: bit 4 fill 0 (clear event)
mov         al, 0f7h
out         dx, al
inc         dx
in          al,dx
and         al, 0efh
out         dx, al
;CR F6h: bit0~7 fill in counter time
```

CR F6h. (WDTO# counter register; Default 00h)

BIT	READ / WRITE	DESCRIPTION
7~0	R / W	Watch Dog Timer Time-out value. Writing a non-zero value to this register causes the counter to load the value to Watch Dog Counter and start counting down. If the bit 7 and 6 of CR F7h are set, any Mouse Interrupt or Keyboard Interrupt event will also cause the reload of previously-loaded non-zero value to Watch Dog Counter and start counting down. Reading this register returns current value in Watch Dog Counter instead of Watch Dog Timer Time-out value. 00h: Time-out Disable 01h: Time-out occurs after 1 second/minute 02h: Time-out occurs after 2 second/minutes 03h: Time-out occurs after 3 second/minutes .... FFh: Time-out occurs after 255 second/minutes

5. Exit configuration mode

```
mov         dx, 02eh
mov         al, 0aah
out         dx, al
```

Award POST Code

Award BIOS Error Message and Check Point (POST code) List (Need to be modified, TBD)

- **Error/Process Message.**

#	Short Name	Description	Possible FRUS
1	CMOS checksum error - Defaults loaded	Checksum of CMOS is incorrect, so the system loads the default equipment configuration. A checksum error may indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.	System board
2	CPU at nnnn	Displays the running speed of the CPU.	processor
3	Press ESC to skip memory test	The user may press Esc to skip the full memory test.	System board
4	Floppy disk(s) fail	Cannot find or initialize the floppy drive controller or the drive. Make sure the controller is installed correctly. If no floppy drives are installed, be sure the Diskette Drive selection in Setup is set to NONE or AUTO.	system board
5	HARD DISK initializing Please wait a moment	Some hard drives require extra time to initialize.	System board
6	HARD DISK INSTALL FAILURE	Cannot find or initialize the hard drive controller or the drive. Make sure the controller is installed correctly. If no hard drives are installed, be sure the Hard Drive selection in Setup is set to NONE.	System board
7	Keyboard error or no keyboard present	Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are pressed during POST. To purposely configure the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. The BIOS then ignores the missing keyboard during POST.	System board
8	Memory Test:	This message displays during a full memory test, counting down the memory areas being tested.	DIMM System board

• **Check Point List**

POST (hex)	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below)
A1h	Set Initial Conditions (Default Values) in EBP
A2h	Determine FSB frequency.
A3h	Begin Detection of installed DIMMS
A4h	Check for Column Latency
A5h	200Mhz or 266Mhz
A6h	Check for tRAS timing
A7h	Check for tRP timing
A8h	Check for tRCD timing
A9h	Check for ECC Support
AAh	Check for refresh timing
ABh	Verify that the DIMM's are in matched pairs
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
01h	Expand the Xgroup codes locating in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	1. Disable PS/2 mouse interface (optional). 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). 3. Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
0Fh	Reserved

10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved

23h	1. Check validity of RTC value:
	    e.g. a value of 5Ah is an invalid value for RTC minute.
	2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead.
	3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information.
	4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots.
	5. Early PCI initialization:
	        -Enumerate PCI bus number
	        -Assign memory & I/O resource
	        -Search for a valid VGA device & VGA BIOS, and put it into C000:0.

24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	1. Program CPU internal MTRR (P6 & PII) for 0-640K memory address. 2. Initialize the APIC for Pentium class CPU. 3. Program early chipset according to CMOS setup. Example: onboard IDE controller. 4. Measure CPU speed. 5. Invoke video BIOS.

2Ah	Reserved
2Bh	Reserved
2Ch	Reserved
2Dh	1. Initialize multi-language 2. Put information on screen display, including Award title, CPU type, CPU speed ….
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips.
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	1. Calculate total memory by testing the last double word of each 64K page. 2. Program write allocation for AMD K5 CPU.
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved

50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	1. Display PnP logo 2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.
5Ah	Reserved
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	1. Initialize Init_Onboard_Super_IO switch. 2. Initialize Init_Onbaord_AUDIO switch.
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 Mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Eh	Reserved
6Fh	1.Initialize floppy controller 2.Set up floppy related fields in 40:hardware.
70h	Reserved
71h	Reserved
72h	Reserved

73h	(Optional Feature)
	Enter AWDFLASH.EXE if :
	    -AWDFLASH is found in floppy drive.
	    -ALT+F2 is pressed

74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM…..

76h	Reserved
77h	Detect serial ports & parallel ports.
78h	Reserved
79h	Reserved
7Ah	Detect & install co-processor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	1. Switch back to text mode if full screen logo is supported. 　　-If errors occur, report errors & wait for keys 　　-If no errors occur or F1 key is pressed to continue: 　　　wClear EPA or customization logo.
80h	Reserved
81h	Reserved
82h	1. Call chipset power management hook. 2. Recover the text fond used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	1. USB final Initialization. 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory. 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM 8. Clear noise of IRQs.
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	1. Enble L2 cache 2. Program boot up speed 3. Chipset final initialization. 4. Power management final initialization 5. Clear screen & display summary table 6. Program K6 write allocation 7. Program P6 class write combining
95h	1. Program daylight saving 2. Update keyboard LED & typematic rate
96h	1. Build MP table 2. Build & update ESCD 3. Set CMOS century to 20h or 19h 4. Load CMOS time into DOS timer tick 5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)

PCI Configuration

PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus pins as follows:

DEVICE	MCP1 INT Pin	IDSEL	CLOCK	REQ# / GNT#
PCI Slot	PIRQA	AD17	PCICLK 0	REQ#0 / GNT#0
Mini PCI Slot	PIRQB	AD18	PCICLK 1	REQ#1 / GNT#1
LAN1	PIRQC	AD21	CLKLAN 1	REQ#2 / GNT#2
LAN2	PIRQD	AD22	CLKLAN 2	REQ#3 / GNT#3

Resource List

I/O Map

I/O Port	Description
0000-000F	DMA Controller 1
0020-0021	Interrupt Controller 1
0040-0043	System Timer
004E-004F	SIO Port
0060,0064	Keyboard Controller
0070-0073	RTC and CMOS
0080-0090	DMA Controller Page Registers
0092	Port 92h
00A0-00A1	Interrupt Controller 2
00B2-00B3	APM register
00C0-00DF	DMA Controller 2
00F0-00FF	Numeric Data Processor
0170-0177	Secondary IDE Controller
01F0-01F7	Primary IDE Controller
02E8-02EF	COM4
02F8-02FF	COM2
0376	Secondary IDE Controller
0378-037F	LPT1
03E8-03EF	COM3
03F6	Primary IDE Controller
03F8-03FF	COM1
0400-045F	ACPI I/O space
0500-050F	SMBus I/O Space
0CF8-0CFF	PCI configuration Port

PCI Devices

Device	Ven. ID	Dev. ID	BUS#	DEV#	FUNC#
Intel Bridge	8086	27A0	00	00	00
Intel VGA	8086	27A2	00	02	00
Intel other Display	8086	27A6			
Intel USB Controller	8086	27C8	00	1D	00
Intel USB Controller	8086	27C9	00	1D	01
Intel USB Controller	8086	27CA	00	1D	02
Intel USB Controller	8086	27CB	00	1D	03
Intel USB Controller	8086	27CC	00	1D	07
Intel PCI Bridge	8086	2448	00	1E	00
Intel Audio	8086	27DE	00	1E	02
Intel Bridge	8086	2707	00	1F	00
Intel IDE	8086	27DF	00	1F	01
Intel IDE	8086	27C4	00	1F	02
Intel	8086	27DA	00	1F	03
Intel Ethernet	8086	1076	01	02	00
Intel Ethernet	8086	1076	01	02	09

SMBus Resource Allocation

Device	Address	Description
ICS954129BF	1101 001X	Clock Generator
MS-7	0101 111X	MSI ACPI Controller
DIMM Slot	1010 0000	SPD
DIMM Slot	1010 0010	SPD

ISA Interrupt Allocation

IRQ	Description
IRQ0	System Timer
IRQ1	Keyboard Controller
IRQ2	Cascade Interrupt
IRQ3	COM2
IRQ4	COM1
IRQ5	COM3
IRQ6	COM4
IRQ7	LPT1
IRQ8	RTC
IRQ9	ACPI Controller Interrupt
IRQ10	PCI Device
IRQ11	PCI Device
IRQ12	PS/2 Mouse
IRQ13	Numeric Data Processor
IRQ14	Primary IDE Controller
IRQ15	Secondary IDE Controller

ISA DMA Channel Allocation

DMA Channel	Description
Channel 0	Unassigned 8-bit channel
Channel 1	Unassigned 8-bit channel
Channel 2	Unassigned 8-bit channel
Channel 3	Unassigned 8-bit channel
Channel 4	Cascade channel
Channel 5	Unassigned 16-bit channel
Channel 6	Unassigned 16-bit channel
Channel 7	Unassigned 16-bit channel

Appendix A
Realtek ALC655 Audio

The barebone is equipped with Realtek® ALC655 chip, which provides support for 6-channel audio output, including 2 Front, 2 Rear, 1 Center and 1 Subwoofer channel. ALC655 allows the board to attach 4 or 6 speakers for better surround sound effect. The section will tell you how to install and use the 2-/4-/6-channel audio function on the board.

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Installing the Audio Driver

You need to install the driver for Realtek ALC655 chip to function properly before you can get access to 2-/4-/6-channel audio operations. Follow the procedures described below to install the drivers for different operating systems.

Installation for Windows 2000/XP

For Windows® 2000, you must install Windows® 2000 Service Pack2 or later before installing the driver.

The following illustrations are based on Windows® XP environment and could look slightly different if you install the drivers in different operating systems.

1. Insert the companion CD into the CD-ROM drive. The setup screen will automatically appear.

2. Click **Realtek AC97 Audio Driver.**
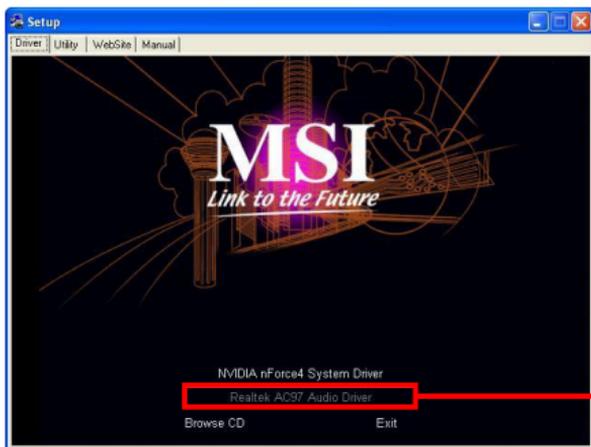
Click here

Important

The AC97 Audio Configuration 🔊 software utility is under continuous update to enhance audio applications. Hence, the program screens shown here in this appendix may be slightly different from the latest software utility and shall be held for reference only.

3. Click **Next** to install the AC97 Audio software.

Click
here

4. Click **Finish** to restart the system.

Select
this

Click
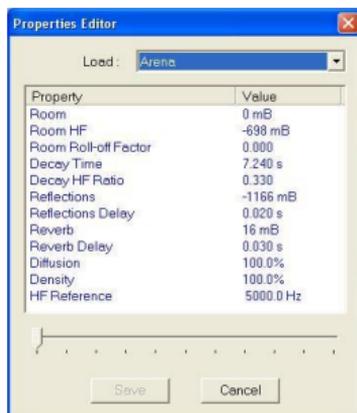here

Software Configuration

After installing the audio driver, you are able to use the 2-/4-/6-channel audio feature now. Click the audio icon from the window tray at the lower-right corner of the screen to activate the **AC97 Audio Configuration**.

Sound Effect

Here you can select a sound effect you like from the **Environment** list.
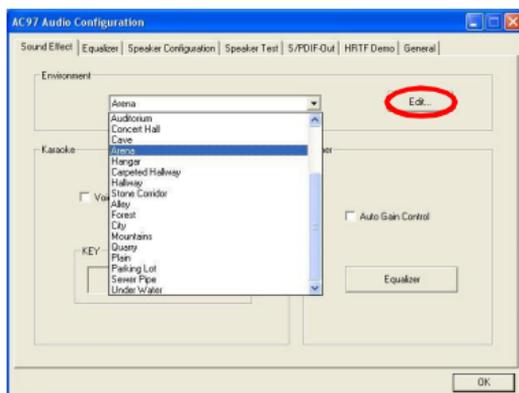
You may also edited the properties for an environment as you wish by clicking the **Edit** button, then just scroll the bar in the bottom for each property to adjust.

Here it provides the Karaoke function which will automatically remove human voice (lyrics) and leave melody for you to sing the song. Note that this function applies only for 2-channel audio operation.

Just check the **Voice Cancellation** box and then click **OK** to activate the Karaoke function.
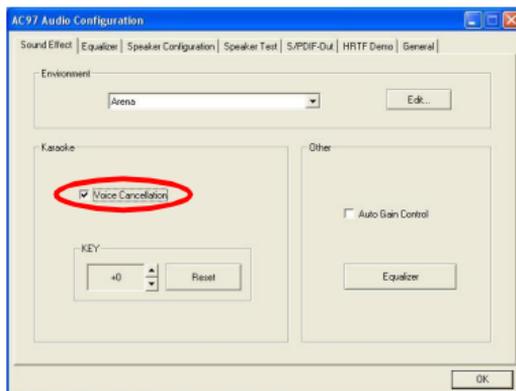
Equalizer

Here you regulate each equalizer for current playing digital sound sources.
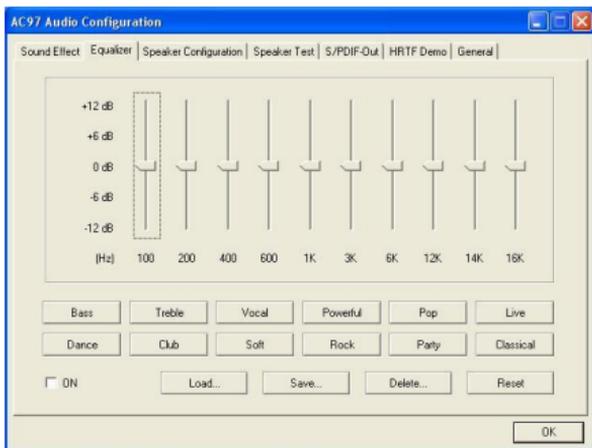
You may choose the provided sound effects, and the equalizer will adjust automatically. If you like, you may also load an equalizer setting or make an new equalizer setting to save as an new one by using the buttons **Load** and **Save**. Or you may click **Reset** to use the default value.

Speaker Configuration

In this tab, you can easily configure your multi-channel audio function and speakers.

1. Select a desired multi-channel operation from **Number of Speakers.**

   a. N/CHeadphone for the common headphone

   b. 2-Channel Mode for Stereo-Speaker Output

   c. 4-Channel Mode for 4-Speaker Output

   d. 6-Channel Mode for 5.1-Speaker Output

2. Then click **OK** to apply the configuration.

1   **2**
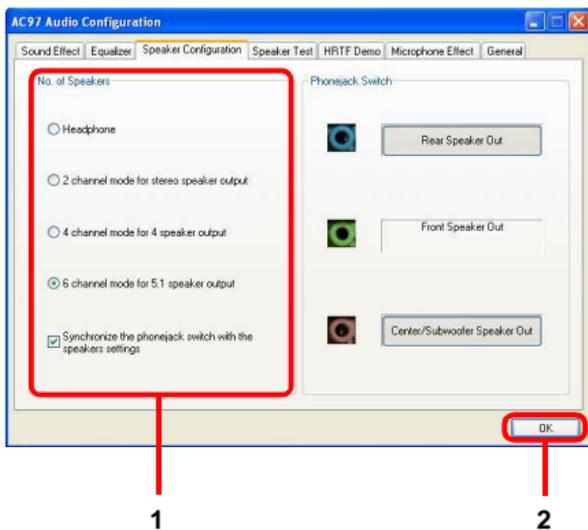
Speaker Test

You can use this tab to test each connected speaker to ensure if 4- or 6-channel audio operation works properly. If any speaker fails to make sound, then check whether the cable is inserted firmly to the connector or replace the bad speakers with good ones.

Center

Front Left

Rear Left

Front Right

Rear Right

Subwoofer

Select this function
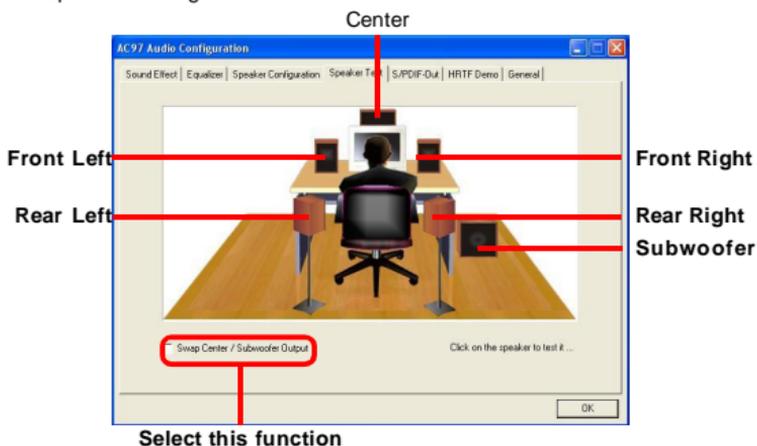
Select the speaker by clicking it to test its functionality. The one you select will light up and make testing sound.

Important

1. *6 speakers appear on the "Speaker Test" tab only when you select "**6-Channel Mode**" in the "Number of Speakers" column in "Speaker Configuration" tab. If you select "4-Channel Mode", only 4 speakers appear on the window.*

2. *While you are testing the speakers in 6-Channel Mode, if the sound coming from the center speaker and subwoofer is swapped, you should select **Swap Center/Subwoofer Output** to readjust these two channels.*

HRTF Demo

In this tab you may adjust your HRTF (Head Related Transfer Functions) 3D positional audio before playing 3D audio applications like gaming. You may also select different environment to choose the most suitable environment you like.
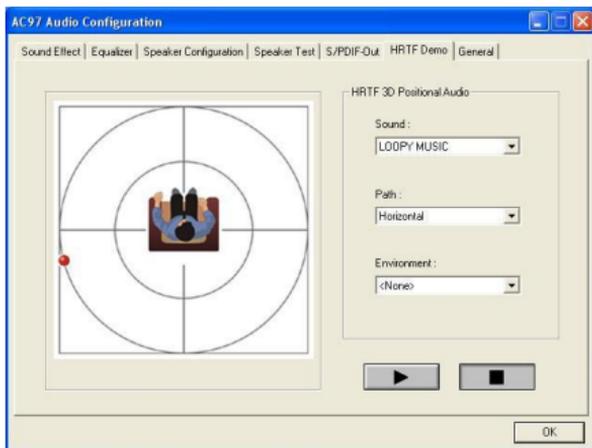
General

In this tab it provides some information about the AC97 Audio Configuration utility, including Audio Driver Version, DirectX Version, Audio Controller & AC97 Codec. You may also select the language of this utility by choosing from the **Language** list.
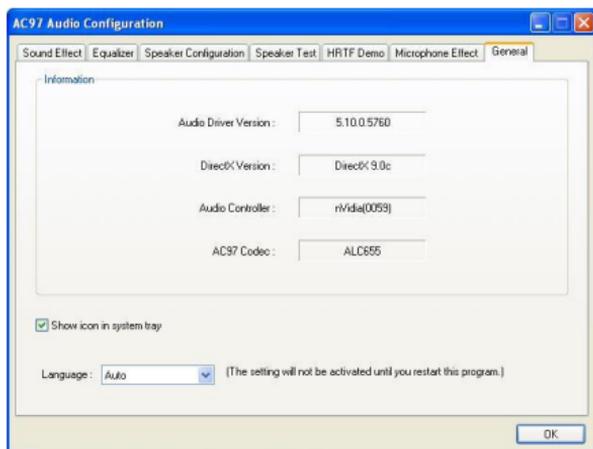
Hardware Setup

In addition to a default 2-channel analog audio output function, the audio connectors on the Back Panel also provide 4- or 6-channel analog audio output function if a proper setting is made in the software utility.

Read the following steps to have the Multi-Channel Audio Function properly set in the software utility, and have your speakers correctly connected to the Back Panel.

Connecting the Speakers

When you have set the Multi-Channel Audio Function mode properly in the software utility, connect your speakers to the correct phone jacks in accordance with the setting in software configuration.
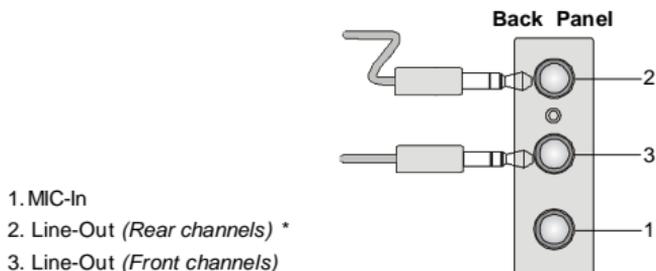
▶ **2-Channel Mode for Stereo-Speaker Output**

Refer to the following diagram and caption for the function of each phone jack on the back panel when 2-Channel Mode is selected.

Back Panel

1. MIC-In
2. Line-In
3. Line-Out *(Front channels)*
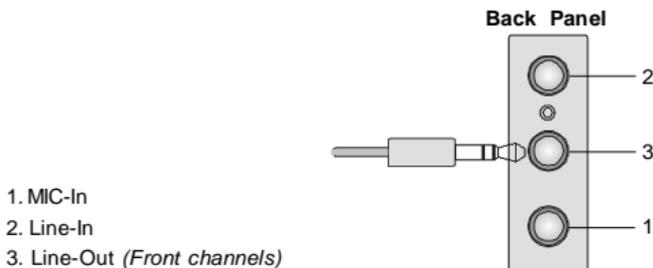
▶ **4-Channel Mode for 4-Speaker Output**

The audio jacks on the back panel always provide 2-channel analog audio output function, however these audio jacks can be transformed to 4- or 6- channel analog audio jacks by selecting the corresponding multi-channel operation from **No. of Speakers**.

Refer to the following diagram and caption for the founction of each jack on the back panel when 4-Channel Mode is selected.
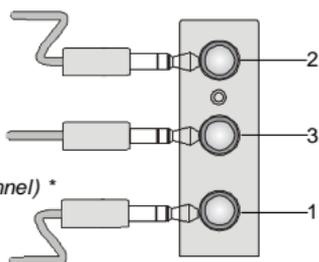
Back Panel

1. MIC-In
2. Line-Out *(Rear channels)* *
3. Line-Out *(Front channels)*

* Line-In function is converted to Line Out function when 4-Channel Mode for 4-Speaker Output is selected.

n 6-Channel Mode for 6-Speaker Output

Refer to the following diagram and caption for the function of each jack on the back panel when 6-Channel Mode is selected.

Back Panel

1. Line-Out *(Center & Subwoofer channel)* *
2. Line-Out *(Rear channels)* *
3. Line-Out *(Front channels)*

* Both Line-In and MIC function are converted to Line-Out function when 6-Channel Mode for 6-Speaker Output is selected.

Important

*While you are testing the speakers in 6-Channel Mode, if the sound coming from the center speaker and subwoofer is swapped, you should select **Swap Center/Subwoofer Output** to readjust these two channels.*